

## **Secret interactions for sterile neutrinos and cosmological implications**

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It has been recently speculated that new “secret” interactions among sterile neutrinos, mediated by a gauge boson  $X$ , can inhibit or suppress the sterile neutrino thermalization, due to the production of a large matter potential term in the flavour evolution equation for the active-sterile system.

In this way it would be possible to relieve the tension among laboratory sterile neutrinos and cosmological data.

This scenario is particularly interesting since it could have important consequences for the small scale structure of dark matter if the mediator  $X$  couples also to dark matter.

We constrain the secret interactions scenario using the Big Bang nucleosynthesis data, the mass limit from Large Scale Structures of the Universe and the latest Planck data on Cosmic Microwave Background anisotropies.

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